IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	**ATTN: BOX AF**
Ryoumei OMOTE et al.	:	**Confirmation No. 2420**
Serial No. 09/486,890	:	Docket No. 00177/530850
Filed May 26, 2000	:	Group Art Unit 1775
TRANSPARENT CONDUCTIVE FILM FOR USE IN TRANSPARENT TOUCH PANEL, TRANSPARENT TOUCH PANEL USING THE TRANSPARENT CONDUCTIVE FILM, AND METHOD FOR FABRICATING TRANSPARENT CONDUCTIVE FILM	:	Examiner Andrew Piziali

RESPONSE TO FINAL REJECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Office Action of December 10, 2003, the time for responding thereto being extended for one month in accordance with a Petition for Extension of Time submitted herewith, Applicants submit the following remarks in support of the patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims. Further and favorable reconsideration is respectfully requested in view of these remarks.

The allowance of claims 46, 48 and 50 is noted.

Present Invention

According to the present invention, a surface shape (roughness) suitable for light touch panel input can be obtained. The light touch input is determined by the contact area between the upper electrode and the lower electrode. The transparent conductive film can be formed with metallic oxide.

That is, as described on page 19, line 23 to page 20, line 19 of the specification,

"[t]he transparent conductive film 1 is so formed that the arithmetic mean roughness (Ra) of

the surface shape is within a range of 0.4 nm ≤ Ra ≤ 4.0 nm and the root-mean-square roughness (Rms) of the surface shape is within a range of 0.6 nm ≤ Rms ≤ 3.0 nm. The reason of this is that forming the transparent conductive film 1 like this makes it possible to obtain a film in which crystal grain aggregates are arranged compact as shown in Fig. 1 and yet which has a good smoothness so that a contact area for input operation can promptly be ensured as shown in Figs. 11 and 12. More specifically, if the arithmetic mean roughness (Ra) is less than 0.4 nm or if the root-mean-square roughness (Rms) is less than 0.6 nm, a considerably dot-like contact results, which is unsuitable for input operation because of less contact area (see Fig. 5 and Figs. 17 to 19). Also, even if either one of the arithmetic mean roughness (Ra) and the root-mean-square roughness (Rms) is within the foregoing range, proper inputs could not be expected. Further, if the arithmetic mean roughness (Ra) is over 4.0 nm or if the root-mean-square roughness (Rms) is over 3.0 nm, sliding characteristics of the transparent conductive film 1 are adversely affected, undesirably." [Emphases added].

Therefore, as defined in claim 16, the transparent conductive film has, in its surface shape, an arithmetic mean roughness (Ra) within a range of 0.4 nm ≤ Ra ≤ 4.0 nm and a root-mean-square roughness (Rms) within a range of 0.6 nm ≤ Rms ≤ 3.0 nm, which ensures that a surface shape (roughness) suitable for light touch panel input can be obtained.

Rejections

The rejection of claims 16, 19, 23, 26, 28, 30, 32-33, 36, 38, 40 ,42, 44-45, 52 and 54 under 35 U.S.C. § 103(a) as being unpatentable over Mikoshiba et al. in view Applicants' Disclosure, is respectfully traversed.

A surface shape (surface roughness) which is suitable for light touch input depends on the distance between projections on the surface as well as the depth direction. Thus, although the grain size is described in Mikoshiba et al., the reference does not disclose the depth information, resulting in a failure in expressing the surface shape.

In contrast, in the present invention, as described above, the transparent conductive film has, in its surface shape, the specified arithmetic mean roughness (Ra) and the specified root-mean-square roughness (Rms), that is, crystal grains can be formed as an aggregate to obtain the surface shape (surface roughness) having a large degree of freedom. Therefore, the film having a large distance

between projections on the surface as well as a large average depth can be formed, thus obtaining a shape suitable for light touch input.

Since a depth (roughness) is obtained in proportion to only a grain size by Mikoshiba et al. in which fillers are merely dispersed, it is difficult to obtain an intermediate roughness which is suitable for light touch input. Moreover, although a dense film can be formed by sputtering or ion-plating as described in Mikoshiba et al., a shape suitable for light touch input can not be obtained because projections can not be formed as an aggregate. Moreover, the trapezoidal shape of claim 23 of the present application can not be obtained by only filler dispersion for a similar reason.

Even though, in Mikoshiba et al., silicon oxide is used for a material of the film and the film has the same contact area as the present invention, the surface shape of Mikoshiba et al. is different from the present invention and thus there is a great difference between this reference and the present invention in electrical conductivity.

The Examiner relies on Applicants' Disclosure for the structure of the touch panel of the prior art. However, even if this structure were combined with the Mikoshiba et al. reference, the result of such combination would still not suggest the presently claimed invention because, as indicated above, Mikoshiba et al. fails to disclose or suggest the transparent conductive film of the present invention.

The rejection of claim 21 under 35 U.S.C. § 103(a) as being unpatentable over Mikoshiba et al. in view of Applicants' Disclosure and further in view of Yukinobu et al., is respectfully traversed.

The comments set forth above concerning Mikoshiba et al. and Applicants' Disclosure are equally applicable to this rejection, it being noted that claim 21 is dependent on claim 16 as discussed above.

Yukinobu et al. discloses many kinds of resins are included in a transparent conductive film. Therefore, even though the film has the same contact area, the construction of the Yukinobu et al. film is different from that of the present invention, and thus there is a great difference between this reference and the present invention in electrical conductivity.

In Yukinobu et al., since many kinds of resins are included in the film, it is difficult to adjust the depth, resulting in difficulty in obtaining the above suitable shape for light touch input and the trapezoidal shape of claim 23.

Accordingly, even if the references and Applicants' Disclosure were combined in the manner suggested by the Examiner, the result of such combination would still not suggest the subject matter of claim 21.

For these reasons, Applicants take the position that the presently claimed invention is clearly patentable over the applied prior art.

Therefore, in view of the foregoing remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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